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the eight previously recorded. James B. Pollock discusses at some length 'Variations in the Pollen Grains of *Picea excelsa*,' and A. M. Reese describes the 'Anatomy of *Cryptobranchus alleghaniensis*.' Some comparisons are made between the skeleton of this species and that of the great salamander of Japan but no deductions are made as to their generic identity or differences. No reference is made to Cope's description of the anatomy of *Cryptobranchus*, though this is given at some length with one or two good figures in his *Batrachia* of North America.

The Museums Journal of Great Britain for March contains a good account of 'The New Zoological Institute at Breslau' by W. E. Hoyle. The idea of preservation of material in the exhibition series is carried to the extreme, for the museum is open to the public but twice a week, and then for only two hours. J. T. Wilson gives a description of the relations existing between the state and 'The Australian Museum, Sydney, New South Wales.' Professor Wilson concludes that in Australia the only practicable form of museum administration is by a board of directors, or trustees; that municipal control is quite out of the question, and that any autocratic form of administration by a director, in the case of an institution supported by public funds, would not be tolerated. In this respect then Australia would seem to differ from other parts of the world where the best form of museum administration seems to be by a responsible director. Mr. Edward Lovett presents in some detail a scheme for a folk museum and there is a brief account of the meeting of the Swedish Museums Association. Among the notes is one stating that in the Hamburg Museum the group illustrating a North Sea oyster bank has been enlarged and reinstalled and cases added showing the growth of precious coral and sponges. Hamburg is certainly to be congratulated on having such a progressive institution.

The Zoological Society Bulletin for March is styled the Aquarium Number and devoted entirely to the New York Aquarium or matters thereto pertaining. Among other articles

it contains the following conundrums: 'Are Fishes Killed by Freezing?' 'Do Fishes Sleep?' 'Do Fishes Hear?' 'Have Fishes Memory?' The last three are answered in the affirmative, the first in the negative. And yet we have known every fish in a large but shallow pond to be killed during an unusually severe winter, though the possibility is that they died from lack of air. Fishes of the pike family may eat but little in an aquarium during winter, but in the New England states many more pickerel are taken through the ice than at any other season. There are interesting articles on the 'Remodeling of the Aquarium'; 'The Sounds Made by Fishes'; 'How Fishes Change Color'; 'Four Years' Change in the Axolotl,' besides many notes. The number is profusely and well illustrated. As a parting shot we should like to express our disbelief in green turtles or loggerheads exceeding 1,000 pounds in weight and would be glad to see one of half that size.

SOCIETIES AND ACADEMIES.

THE TORREY BOTANICAL CLUB.

THE club met in the American Museum of Natural History, March 13, 1906, at 8 p.m. President Rusby was in the chair and thirteen persons were present.

A communication was read from Mr. Ellsworth Bethel, of Denver, Col., stating that he and Dr. Sturgis were at work on the fungi of Colorado, and would soon publish their first number, listing the Myxomycetes of the state.

President Rusby presented the matter of public recognition by the club of the coming tenth anniversary of the establishment of the New York Botanical Garden, and the appointment of Dr. Britton as professor emeritus of botany in Columbia, and of Professor Underwood as Torrey professor.

Motion was made and seconded that a committee be appointed by the chair to make arrangements for such an event. The motion was carried, and the president appointed the following committee: Miss Vail, Miss Marble, Dr. Murrill, Dr. Curtis, Professor Richards, Dr. MacDougal and Dr. Barnhart.

The first paper on the scientific program

was by Dr. P. A. Rydberg, entitled 'Botanizing in Utah.'

The substance of this paper appeared in the *Journal of the New York Botanical Garden*, 6: 158. 1905.

Many herbarium specimens were passed, illustrative of the paper.

The last paper was by Professor E. S. Burgess, on 'Biotian Asters.'

This paper was an informal discussion of the Biotian section of the genus *Aster*, accompanying the publication at this time of the author's monograph on the Biotian Asters (constituting Vol. 13 of the Torrey Club's Memoirs) with description and figures of 84 species and 10 subspecies, and with informal description of about 250 less definite forms. The Biotian section of *Aster* is one of the most difficult and variable, and seems particularly active in production of new forms, some other sections of *Aster* being quite stable in comparison. Most of the larger and more conspicuous species, with violet or lavender rays and glandular hair, constitute as a subsection the Macrophylli, typified by the well-known *Aster macrophyllus* L. Specimens illustrating the principal species of this subsection were exhibited and compared, and the speaker described the results of his method of continued observation on plant-colonies in unchanged natural habitat, with reference especially to the development of variations, and to distinction between certain changes apparently due to environmental conditions and other changes suggesting origin by mutation. Many herbarium sheets were shown illustrating the paper and especially the marked variations in this group of asters.

The club met at the Museum Building of the New York Botanical Garden, March 28, 1906. In the absence of President Rusby, Dr. C. C. Curtis was called to the chair.

Dr. J. K. Small presented the first paper on the scientific program, on 'Additions to the Flora of Florida.' Specimens of the surface soil and subsoil, herbarium and alcoholic specimens, maps and photographs illustrated the paper.

The second paper was by Dr. J. H. Barn-

hart, on 'The Dating of Botanical Publications.'

Dates of issue of publication have always been of more or less interest to bibliographers, but modern biological nomenclature, with priority of publication as one of its fundamental principles, has emphasized to a marked degree the importance of determining accurately the exact time when novelties are placed before the scientific public.

The novice usually accepts without question the date printed on a title-page. Soon, however, he discovers a book with a clear, definite, unmistakable reference to one bearing a later date—perhaps a year or two, possibly many years. Here, then, he has evidence, amounting to convincing proof, that at least one of the books he has been consulting is incorrectly dated; but he may find it difficult to determine which is wrong, and still more difficult to replace the erroneous date by the correct one. Few, even of experienced botanists, realize what a large percentage of the literature of our science is labeled with misleading dates.

The purpose of the paper was to call attention to some of the causes of this state of affairs, to furnish examples of various classes of erroneous dating, and to mention certain precautions the observance of which will reduce the percentage of errors in the citation of dates. Many publications were shown to illustrate the paper. C. STUART GAGER,

Secretary.

THE MICHIGAN ORNITHOLOGICAL CLUB.

The annual meeting of the Michigan Ornithological Club was held in conjunction with the annual meeting of the Section of Zoology of the Michigan Academy of Science in the Museum lecture room, Ann Arbor, on Friday, March 30, 1906.

The meeting was called to order by Chas. C. Adams, vice-president of the section of zoology. The following were the papers presented dealing with ornithology:

FRANK J. PHILLIPS: 'Bird Dissemination of *Juniperus*.'

MAX M. PEET: 'An Ecological Study of the Birds of Ypsilanti Bayou.'

NORMAN A. WOOD: 'Twenty-five Years of Bird Migration at Ann Arbor.'

NORMAN A. WOOD: 'The Bird Life of Ann Arbor, Michigan, and Vicinity.' (By title.)

E. H. FROTHINGHAM: 'Notes on the Birds of the Michigan Forest Reserve.'

R. A. BROWN: "A Topographical Study of the Birds of the 'Overflow,' at Ann Arbor, Mich."

CHAS. C. ADAMS: 'An Ecological Survey of Isle Royal, Lake Superior.'

OTTO MCCREARY: 'The Ecological Distribution of the Birds on Isle Royal.'

MAX M. PEET: 'The Fall Migration of Birds on Isle Royal.' (By title.)

Professor Walter B. Barrows, president of the academy and of the club, gave his presidential address before the academy, on 'Facts and Fancies in Bird Migration' in the new lecture room of the physical laboratory on Thursday evening.

A business meeting was held in the afternoon in the office of the curator of the university museum. The following officers were elected for 1906-7.

President—Walter B. Barrows, Agricultural College.

First Vice-president—J. Claire Wood, Detroit.

Second Vice-president—Edward Arnold, Battle Creek.

Third Vice-president—Norman A. Wood, Ann Arbor.

Secretary—Alexander W. Blain, Jr., Detroit.

Treasurer—Frederick C. Hubel, Detroit.

Editor of the Bulletin—Walter B. Barrows.

Associate Editors—Wm. H. Dunham, Kalkaska; R. A. Brown, Kalamazoo.

The meeting adjourned to meet at the Detroit Museum of Art on May 4, 1906.

ALEXANDER W. BLAIN, JR.,
Secretary.

DISCUSSION AND CORRESPONDENCE.

THE FALLACY OF THE MUTATION THEORY.

DR. C. H. MERRIAM has lately pointed out¹ that *mutation* in de Vries's sense is not a species-forming factor, and that it is rarely, if at all, observed among living animals. Major T. L. Casey objects² to this sweeping

condemnation of de Vries's theory, and believes that there 'may be a good deal' in the latter.

I only can endorse Merriam's view, and want to go on record as condemning even more emphatically the mutation theory for the following reasons:

De Vries claims that the process of mutation forms new species, and that the individual mutations (mutants) *are* species. In order to demonstrate this, he has made a number of experiments, in which he tries to show that the mutations breed true, and he uses this fact as a *test* for the specific value of the mutations. No other test is admitted, or even mentioned, by him.

This shows at a glance that de Vries's conception of the term species is all wrong, that he does not know, what constitutes a species, in spite of his lengthy discussion of this term. Of course, it is generally admitted that species should breed true: but this is also a necessary character that belongs to the concept of variety. What distinguishes species from varieties is the fact that a species is not connected by intermediate or transitional forms with the most closely allied species. This latter principle is the one made use of exclusively (if possible) by systematists, botanists as well as zoologists. In many cases, indeed, it can not be used on account of the insufficiency of our knowledge; but under such conditions new species are always described with the tacit understanding that the demonstration of the existence of intermediate forms will reduce them to the rank of varieties.

De Vries has failed entirely to take notice of this fundamental principle, and to show that his elementary species and his mutations are *not* connected by intermediate forms with each other. But looking over the instances introduced by him, we see that such intermediate forms are recorded by de Vries himself, and I know from personal experience that such are present among several of the polymorphous genera mentioned by him (*Viola*, *Draba*).

Further, according to the experimental records on *Oenothera*, given by de Vries, I can not see how he is in a position to main-

¹ SCIENCE, February 16, 1906, p. 241, chiefly pp. 256 and 257.

² SCIENCE, April 20, 1906, p. 632.